REMARKS

The Office action dated October 9, 2003 and the cited references have been carefully considered.

Status of the Claims

Claims 1-64 are pending.

Claims 17 and 64 are allowed. Claims 15, 24, 27, and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicants wish to thank the Examiner for indicating that claims 17 and 64 are allowed, and claims 15, 24, 27, and 57 are allowable. Claims 15, 24, 27, and 57 have been rewritten in independent and are now in condition for allowance. Early allowance is respectfully requested.

Claims 28-50 and 59-60 would be allowable if rewritten to overcome the objection with respect to an alleged erroneous name of the group represented by aluminum, gallium, and indium. The Applicants respectfully traverse this objection for the reason set forth below, which obviate an amendment to these claims.

Claims 1, 18, 20-23, and 25 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kitai et al. (U.S. Patent 5,788,882; hereinafter "Kitai"). Claims 1-9, 18, 20, 21, 23, 25, and 26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Murayama et al. (U.S. Patent 5,424,006; hereinafter "Murayama"). Claims 18 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hase et al. (U.S. Patent 6,190,577; hereinafter "Hase"). Claims 10, 11, 13, 14, 51, 52, 55, and 56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Srivastava et al. (U.S. Patent 6,278,135; hereinafter "Srivastava") in view of Murayama. Claims 10-12, 16, 51-54, 58, and 61-63 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hohn et al. (U.S. Patent 6,066,861; hereinafter "Hohn") in view of Murayama. The Applicants respectfully traverse this rejection for the reasons set forth below.

Claim Objection

Claims 1-8, 10-16, and 18-63 are objected to because the Examiner asserts that aluminum, gallium, and indium belong to Group-IIIA of the Periodic Table, not Group-IIIB as recited in these claims. Although the Examiner is correct in that he refers to the group names designated by Chemical Abstract Service, the Applicants respectfully traverse this objection because a person of ordinary skill in the art of chemistry knows that the Applicants use the group name designated by the International Union of Pure and Applied Chemistry ("IUPAC"). The Applicants are submitting herewith a copy of the Periodic Table as published in "Hawley's Condensed Chemical Dictionary," 13th edition, Richard J. Lewis, Johns Wiley & Sons, Inc., New York, New York (1997), which clearly shows that aluminum, gallium, and indium belong to Group-IIIB as named by the IUPAC. Therefore, the claims are clear, and the Applicants do not believe that an amendment to these claims is necessary.

Claims 59 and 60 are objected to because they recite the term "phosphor blend" twice. Claim 59 has been amended to delete the second occurrence of "phosphor blend." Claim 60 is dependent upon claim 59. Therefore, both of these claims now overcome the objection.

Claim Rejection Under 35 U.S.C. § 102(b)

Claims 1, 18, 20-23, and 25 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kitai. The Applicants respectfully traverse this rejection because Kitai does not teach each and every element of each of claims 1, 18, 20-23, and 25.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a *single* prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

The Examiner cited that Kitai discloses compositions of claims 1, 18, 20-23, and 25 at column 8, line 8; and column 9, lines 14 and 35-36. Although Kitai's patent, as printed, apparently shows a composition of $Sr_{0.89}Eu_{0.01}Ga_2O_4$ at column 8, line 8, and $Ca_{0.89}Eu_{0.01}Ga_2O_4$ at column 9, line 14, these formulas were printed erroneously in this patent. Instead, Kitai actually discloses $Sr_{0.99}Eu_{0.01}Ga_2O_4$ and $Ca_{0.99}Eu_{0.01}Ga_2O_4$. The

Examiner is respectfully requested to consult page 14, line 1; page 15, line 5; and page 16, line 8 of Kitai's original specification. In other words, Kitai discloses formulas wherein the sum of the subscripts of the alkaline-earth element and europium is equal to 1.

In contradistinction, claims 1, 18, 20-23, and 25 recite a formula of $(M_{1-x}RE_x)_yD_2O_4$, wherein $0.001 < x < 0.3$, and y satisfies a condition selected from the group consisting of $0.75 < y < 1$ and $1 < y < 1.1$. The formula of claims 1, 18, 20-23, and 25 can be written alternatively as $M_{y-xy}RE_{xy}D_2O_4$, wherein $0.001 < x < 0.3$, and y satisfies a condition selected from the group consisting of $0.75 < y < 1$ and $1 < y < 1.1$. When the subscript of RE is 0.01 (as disclosed in Kitai's formulas), the subscript y-xy of M takes the value of y-0.01. When the condition for y recited in claims 1, 18, 20-23, and 25 is applied to y-0.01, it has a value selected from the group consisting of $0.074 < y\text{-}xy < 0.99$ and $0.99 < y\text{-}xy < 1.09$. In other words, each of claims 1, 18, 20-23, and 25 recites that when the subscript of the rare-earth element is 0.01 (as disclosed by Kitai), the subscript of the alkaline-earth element is never equal to 0.99. Therefore, Kitai's formulas do not teach the compositions recited in claims 1, 18, 20-23, and 25.

Since Kitai does not disclose the formula of each of claims 1, 18, 20-23, and 25, Kitai does not anticipate these claims.

Claims 1-9, 18, 20, 21, 23, 25, and 26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Murayama. The Applicants respectfully traverse this rejection because Murayama does not disclose each and every element of each of claims 1-9, 18, 20, 21, 23, 25, and 26.

The Examiner asserts that Murayama discloses in Tables 9-20 the compositions of claims 1-9, 18, 20, 21, 23, 25, and 26. The Applicants respectfully traverse this assertion because, when the concentrations of the rare-earth elements of each of the samples of Tables 9-20 are applied, the concentration of the alkaline-earth element never satisfies each and every limitation of the formula recited in each of claims 1-9, 18, 20, 21, 23, 25, and 26. For example, the formula of Murayama's sample 5-(7) (in Table 9) is $M_{0.99499}RE_{0.00501}D_2O_4$ if written in the form recited in claims 1-9, 18, 20, 21, 23, 25, and 26 (wherein M is Ca, RE is the combination of Eu and Nd, and D is Al).

In contradistinction, when the subscript of RE is 0.00501, the subscript of M in each of claims 1-9, 18, 20, 21, 25, and 26 is selected from the group consisting of $0.74499 < y\text{-}xy < 0.99499$ and $0.99499 < y\text{-}xy < 1.09499$. In other words, when the subscript of RE is 0.00501, the subscript of M is never 0.99499. Similarly, the subscript of M for each of Murayama's samples may be calculated from the concentrations of the rare-earth elements, and never satisfies the condition recited in each of claims 1-9, 18, 20, 21, 25, and 26. Therefore, Murayama does not disclose the composition of each of claims 1-9, 18, 20, 21, 23, 25, and 26.

Since Murayama does not disclose the formula of each of claims 1-9, 18, 20, 21, 25, and 26, Murayama does not anticipate these claims.

Claims 18 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hase. The Applicants respectfully traverse this rejection because Hase does not disclose each and every limitation of each of claims 18 and 19.

In the notation of claims 18 and 19, Hase discloses compositions having a formula of $M_{y-xy}RE_{xy}D_2O_4$, wherein M is Sr, Ca, or Ba; RE is Eu; D is a combination of Al and In; $xy = 0.01$; and $y\text{-}xy = 0.99$.

In contradistinction, when $xy = 0.01$, claims 18 and 19 recite that the subscript y-xy of M is selected from the group consisting of 0.74 , $y\text{-}xy < 0.99$ and $0.99 < y\text{-}xy < 1.09$. In other words, the subscript of M in claims 18 and 19 is never equal to 0.99 when the subscript of RE is 0.01. Therefore, the composition of Hase does not satisfy the condition of each of claims 18 and 19.

Since Hase does not disclose each and every limitation of each of claims 18 and 19, hase does not anticipate these claims.

Claims 10, 11, 13, 14, 51, 52, 55, and 56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Srivastava in view of Murayama. The Applicants respectfully traverse this rejection because a combination of Srivastava and Murayama does not teach or suggest all of the limitations of each of claims 10, 11, 13, 14, 51, 52, 55, and 56.

"[T]he legal conclusion of obviousness [under 35 U.S.C. § 103(a)] requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the components that the inventor selected and used them to make the new [invention]." *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 U.S.P.Q.2d 1225, 1231 (Fed. Cir. 1998). Thus, in order for the prior art to render the claimed invention obvious, all of the elements thereof must be taught or suggested in the prior art. "What must be found obvious to defeat the patentability of the claimed invention is the claimed combination." *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1927 (Fed. Cir. 1990).

As pointed out above, Murayama's formula does not satisfy the condition for the formula recited in the instant claims. Nor Murayam suggests the formula for the phosphor of the instant claims. Therefore, adding Srivastava to show a disclosure of an LED and a phosphor blend still does not teach or suggest all of the limitations of each of claims 10, 11, 13, 14, 51, 52, 55, and 56.

Since a combination of Srivastava and Murayama does not teach or suggest all of the limitations of each of claims 10, 11, 13, 14, 51, 52, 55, and 56, these claims are patentable Srivatava in view of Murayama under 35 U.S.C. § 103(a).

Claims 10-12, 16, 51-54, 58, and 61-63 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hohn in view of Murayama. The Applicants respectfully traverse this rejection because a combination of Hohn and Murayama does not teach or suggest all of the limitations of each of claims 10-12, 16, 51-54, 58, and 61-63.

As pointed out above, Murayama's formula does not satisfy the condition for the formula recited in the instant claims. Nor Murayam suggests the formula for the phosphor of the instant claims. Therefore, adding Hohn to show a disclosure of an LED and a phosphor coating containing a phosphor still does not teach or suggest all of the limitations of each of claims 10-12, 16, 51-54, 58, and 61-63.

Since a combination of Hohn and Murayama does not teach or suggest all of the limitations of each of claims 10-12, 16, 51-54, 58, and 61-63, these claims are patentable Hohn in view of Murayama under 35 U.S.C. § 103(a).

In view of the above, it is submitted that the claims are patentable and in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims at an early date is solicited.

Respectfully submitted,

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Dictionary

THIRTEENTH EDITION

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Periodic table of the elements

New notation / Previous IUPAC form / CAS version

1 Group IA	2 IIA	3 IIIA IIIB	4 IVA IVB	5 VA VB	6 VIA VIB	7 VIIA VIIB	8	9 VIIIA VIII	10	11 IB	12 IIB	13 IIIB IIIA	14 IVB IVA	15 VB VA	16 VIB VIA	17 VIIB VIIA	18 VIIIA
1 H 1.0079																	2 He 4.00260
3 Li 6.941	4 Be 9.01218											5 B 10.81	6 C 12.011	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.179
11 Na 22.9898	12 Mg 24.305											13 Al 26.9815	14 Si 28.0855	15 P 30.9738	16 S 32.066(6)	17 Cl 35.453	18 Ar 39.948
19 K 39.0983	20 Ca 40.08	21 Sc 44.9559	22 Ti 47.88	23 V 50.9415	24 Cr 51.996	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.69	29 Cu 63.546	30 Zn 65.39	31 Ga 69.72	32 Ge 72.59	33 As 74.9216	34 Se 78.96	35 Br 79.904	36 Kr 83.80
37 Rb 85.4678	38 Sr 87.62	39 Y 88.9059	40 Zr 91.224	41 Nb 92.9064	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.906	46 Pd 106.42	47 Ag 107.868	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.75	52 Te 127.60	53 I 126.905	54 Xe 131.29
55 Cs 132.905	56 Ba 137.33	57 La★ 138.906	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Re 186.207	76 Os 190.2	77 Ir 192.22	78 Pt 195.08	79 Au 196.967	80 Hg 200.59	81 Tl 204.383	82 Pb 207.2	83 Bi 208.980	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra 226.025	89 Ac▲ 227.028	104 Unq[a] (261)	105 Unp[a] (262)	106 Unh[a] (263)	107 Uns[a] (262)											

★ Lanthanide series	58 Ce 140.12	59 Pr 140.908	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.925	66 Dy 162.50	67 Ho 164.930	68 Er 167.26	69 Tm 168.934	70 Yb 173.04	71 Lu 174.967
▲ Actinide series	90 Th 232.038	91 Pa 231.036	92 U 238.029	93 Np 237.048	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (260)

Note: Atomic masses shown here are the 1991 IUPAC values (maximum of six significant figures). **a** Symbols based on IUPAC systematic names.

Element

Actinium
Aluminun
Americiu
Antimony
Argon
Arsenic
Astatine
Barium
Berkelium
Beryllium
Bismuth
Boron
Bromine
Cadmium
Calcium
Californiu
Carbon
Cerium
Cesium
Chlorine
Chromiur
Cobalt
Copper
Curium
Dysprosiu
Einsteiniu
Erbium
Europium
Fermium
Fluorine
Francium
Gadoliniu
Gallium
Germaniu
Gold
Halfnium
Helium
Holmium
Hydrogen
Indium
Iodine
Iridium
Iron
Krypton
Lanthanu
Lawrencii
Lead
Lithium
Lutetium
Magnesiu
Manganes
Mendelev